

## CLAIMS

What is claimed is:

1. A computer-readable medium having software for editing a decomposed original video sequence, said decomposed original video sequence comprising one or more original camera-motion layers and zero or more original fixed-frame layers decomposed from an original video sequence, said software comprising:

code segments for editing at least one of said original camera-motion layers to obtain modified camera-motion layers such that each frame of a composite modified video sequence composed from said modified camera-motion layers and said original fixed-frame layers is obtained without editing each frame of said original video sequence, said editing comprising performing an edge operation to one of said original camera-motion layers.

2. A computer-readable medium as in claim 1, wherein said code segments for editing said original camera-motion layers comprise:

code segments for converting one of said original camera-motion layers to said original image;

code segments for performing said edge operation to said original image to obtain an edge image;

code segments for editing said edge image to obtain a modified image; and

code segments for converting said modified image to one of said modified camera-motion layers.

3. A computer-readable medium as in claim 2, wherein said code segments for editing said original camera-motion layers further comprise:

code segments for rectifying said original image prior to performing said edge operation;  
and

5 code segments for rectifying said modified image prior to converting said modified image.

4. A computer-readable medium as in claim 1, wherein said code segments for editing said original camera-motion layers comprise:

code segments for inserting a portion into, deleting a portion from, or changing a portion of one of said original camera-motion layers to obtain one of said modified camera-motion layers.

5. A computer-readable medium as in claim 1, wherein said code segments for editing  
15 said original camera-motion layers comprise:

code segments for replacing one of said original camera-motion layers with another camera-motion layer to obtain one of said modified camera-motion layers.

6. A computer-readable medium as in claim 1, wherein said code segments for editing  
20 said original camera-motion layers comprise:

code segments for adding a video sequence to one of said original camera-motion layers to obtain one of said modified camera-motion layers.

7. A computer-readable medium as in claim 1, wherein said code segments for editing said original camera-motion layers comprise:

code segments for adding an animation sequence to one of said original camera-motion layers to obtain one of said modified camera-motion layers.

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8. A computer-readable medium as in claim 1, wherein said code segments for editing said original camera-motion layers comprise:

code segments for adding a three-dimensional object to one of said original camera-motion layers to obtain one of said modified camera-motion layers.

9. A computer-readable medium as in claim 1, wherein said code segments for editing said original camera-motion layers comprise:

code segments for adding a user-activated region to one of said original camera-motion layers to obtain one of said modified camera-motion layers.

10. A computer-readable medium as in claim 1, wherein said code segments for editing said original camera-motion layers comprise:

code segments for modifying an on/off time of one of said original camera-motion layers to obtain one of said modified camera-motion layers.

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11. A computer-readable medium as in claim 1, wherein said code segments for editing said original camera-motion layers comprise:

code segments for modifying an opaqueness of one of said original camera-motion layers to obtain one of said modified camera-motion layers.

12. A computer-readable medium as in claim 1, wherein said code segments for editing  
5 said original camera-motion layers comprise:

code segments for modifying fade-in/fade-out of one of said original camera-motion layer to obtain one of said modified camera-motion layers.

13. A computer-readable medium as in claim 1, wherein said code segments for editing  
10 said original camera-motion layers comprise:

code segments for modifying an ordering of one of said original camera-motion layers with respect to other layers of said decomposed original video sequence to obtain said modified camera-motion layers.

14. A computer-readable medium as in claim 1, wherein said code segments for editing  
15 said original camera-motion layers comprise:

code segments for deleting one of said original camera-motion layers of said decomposed original video sequence.

20 15. A computer-readable medium as in claim 1, wherein said code segments for editing said original camera-motion layers comprise:

code segments for adding another camera-motion layer to said decomposed original video sequence, such that an ordering of said original camera-motion layers with respect to other

layers of said decomposed original video sequence is modified to obtain said modified camera-motion layers.

16. A computer-readable medium as in claim 1, wherein said code segments for editing  
5 said original camera-motion layers comprise:

code segments for modifying a size of one of said original camera-motion layer to obtain one of said modified camera-motion layer.

17. A computer-readable medium as in claim 1, wherein said code segments for editing  
10 said original camera-motion layers comprise:

code segments for editing camera motion parameters of one of said original camera-motion layer to obtain modified camera motion parameters.

18. A computer-readable medium as in claim 17, wherein said code segments for editing  
15 camera motion parameters comprise:

code segments for adjusting at least one of said camera motion parameters to obtain said modified camera motion parameters.

19. A computer-readable medium as in claim 17, wherein said code segments for editing  
20 camera motion parameters comprise:

code segments for replacing said camera motion parameters with analytically-derived camera motion parameters to obtain said modified camera motion parameters.

20. A computer-readable medium as in claim 17, wherein said code segments for editing camera motion parameters comprise:

code segments for replacing said camera motion parameters with camera motion parameters from another video sequence to obtain said modified camera motion parameters.

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21. A computer-readable medium as in claim 1, further comprising the step of:

code segments for editing at least one of said original fixed-frame layers to obtain modified fixed-frame layers, said editing comprising performing an edge operation to one of said original fixed-frame layers.

22. A computer-readable medium as in claim 21, wherein said code segments for editing said original fixed-frame layers comprise:

code segments for converting one of said original fixed-frame layers to an original image;

code segments for performing said edge operation to said original image to obtain an edge image;

code segments for editing said edge image to obtain a modified image; and

code segments for converting said modified image to one of said modified fixed-frame layers.

20 23. A computer-readable medium as in claim 22, wherein said code segments for editing said original fixed-frame layers further comprise:

code segments for rectifying said original image prior to performing said edge operation;

and

code segments for rectifying said modified image prior to converting said modified image.

24. A computer-readable medium as in claim 21, wherein said code segments for editing  
5 said original fixed-frame layers comprise:

code segments for adding camera motion parameters to at least one of said original fixed-frame layers.

25. A computer comprising the computer-readable medium of claim 1.

26. A method for editing a decomposed original video sequence, said decomposed  
original video sequence comprising one or more original camera-motion layers and zero or more  
original fixed-frame layers decomposed from an original video sequence, comprising the step of:

editing at least one of said original camera-motion layers to obtain modified camera-  
15 motion layers such that each frame of a composite modified video sequence composed from said  
modified camera-motion layers and said original fixed-frame layers is obtained without editing  
each frame of said original video sequence, said editing comprising performing an edge  
operation to one of said original camera-motion layers.

27. An apparatus for editing a decomposed original video sequence, said decomposed  
20 original video sequence comprising one or more original camera-motion layers and zero or more  
original fixed-frame layers decomposed from an original video sequence, comprising:

means for editing at least one of said original camera-motion layers to obtain modified camera-motion layers such that each frame of a composite modified video sequence composed from said modified camera-motion layers and said original fixed-frame layers is obtained without editing each frame of said original video sequence, said editing comprising performing  
5 an edge operation to one of said original camera-motion layers.

28. An apparatus as in claim 27, further comprising:

means for editing at least one of said original fixed-frame layers to obtain modified fixed-frame layers.

29. An apparatus for editing an original video sequence, comprising:

an object-based video encoder to decompose said original video sequence into a decomposed original video sequence, said decomposed original video sequence comprising one or more original camera-motion layers and zero or more original fixed-frame layers;

a video editor to perform an edge operation to one of said original camera-motion layers and to edit said edge operated original camera-motion layers to obtain a decomposed modified video sequence; and

an object-based video compositor to compose said decomposed modified video sequence to obtain a composite modified video sequence, wherein each frame of said composite modified  
20 video sequence is obtained without editing each frame of said original video sequence.

30. A computer-readable medium having software for implementing a video coloring book.



31. A computer-readable medium as in claim 30, said software comprising code segments for editing at least one camera-motion layer.

5 32. A computer-readable medium as in claim 31, wherein the camera-motion layer is decomposed from a video sequence.

33. A computer-readable medium as in claim 31, wherein the camera-motion layer is an image.

34. A computer-readable medium as in claim 30, said software comprising code segments for editing at least one fixed-frame layer.

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